

HISTORIC AMERICAN ENGINEERING RECORD
INDEX TO PHOTOGRAPHS

HAER
VT
4-SHEL,
1-

Ferry TICONDEROGA
Shelburne Museum
Route 7
Shelburne
Chittenden County
Vermont

HAER No. VT-14

All photographs by Jet Lowe, HAER staff Photographer, July, 1988.

- VT-14-1: Starboard profile from abeam of rudder.
- VT-14-2: Starboard bow.
- VT-14-3: Bow-on view of hull, showing sponson deck braces.
- VT-14-4: View of port side forebody of hull, showing turn of bilge and sponson deck construction (white rectangles on hull were applied by HAER recording team to number vessel's frames and are not an original feature).
- VT-14-5: Oblique view of port side paddlewheel below sponson deck.
- VT-14-6: Elevation of lower half of port side paddlewheel; note Mason feathering mechanism used for paddles.
- VT-14-7: View down between paddlewheel rims from inside paddlewheel box off main deck. Eccentric center for Mason feathering mechanism is mounted on rub rail at left, housing for paddlewheel shaft bearing is shown at right.
- VT-14-8: Stern-on view of vessel showing rudder, sponson deck construction and steering chain system.
- VT-14-9: Port side view of rudder and steering chain system.
- VT-14-10: Lower deck forward just aft of chain locker, looking forward in crew's bunkroom.

Ferry TICONDEROGA
HAER No. VT-14 (page 2)
INDEX TO PHOTOGRAPHS

- VT-14-11: Forward machinery space looking aft toward starboard side, showing blower engine in foreground with belt running to blower. Steering engine lies in background; note sheave for port side steering cable in upper right hand corner of view.
- VT-14-12: Forward end of Boiler Room showing open firing doors for boilers. Note ladderway retracted overhead by which firemen entered and left Boiler Room. Coal ejectors shown at extreme left of view.
- VT-14-13: Coal ejectors mounted on aft bulkhead of coal bunker. Ejectors were used to flush overboard live coals and clinkers from firebed (pipe for carrying coals overboard has been removed from ejector in foreground). Coal doors from bunker appear beside ejector in foreground). Coal doors from bunker appear beside ejectors at deck; note firing shovels in background against hull.
- VT-14-14: Elevation of boiler backhead showing (left to right at top) steam pressure gauge, sight glass (indicates water level in boiler), manhole (for maintenance access to steam space), and try-cocks (used to determine water level if sight glass is inoperative). Below the firedoors lie air plenums which supply air from blower to firegrates; plenum door at lower left has been removed for photography. Each boiler was built by W. & A. Fletcher Co. to operate at 50 p.s.i.
- VT-14-15: Interior view of firebox through firedoor. Each boiler was built with two fireboxes; grates supporting firebed show below in image, plenum for carrying hot gasses to flues shows in background.
- VT-14-16: View into interior steam spaces of boiler above fireboxes through manhole (see photo VT-14-16 for manhole location). Tops--or crown sheets--of fireboxes show below. Vertical and inclined bars are stays used to hold boiler together and reinforce flat plates under pressure. Note water level used in boilers indicated by scale encrustation on stays. (Threaded stud in extreme foreground belongs to manhole cover opened for purposed of photography.)
- VT-14-17: Internal view of boiler in steam space above return flues. View looks forward in ship toward fireboxes; tubes (flues) below carry hot combustion gases from return chamber to smoke chamber. From thence gasses flow through vertical pipe at left into steam stack, and eventually to ship's smokestack. Inclined and radiating straps are stays used to reinforce boiler plates against distortion under pressure.

**Sidewheel Ferry TICONDEROGA
HAER No. VT-14 (page 3)
INDEX TO PHOTOGRAPHS**

- VT-14-18:** Internal view of boiler in steam space above return flues, looking aft in ship toward return chamber. Inclined and vertical stays are used to reinforce flat boiler plates against distortion under pressure.
- VT-14-19:** On salon deck level, view looking forward at tops of steam chimneys (rising from boilers) showing safety valves, safety valve vent pipe, and smoke bonnet underneath smokestack. Steam chimneys are integral parts of the boilers and in effect are smokestacks surrounded by a pressurized steam space continuous with the boiler steam spaces.
- VT-14-20:** On salon deck level, view looking aft at tops of steam chimneys showing smoke bonnet beneath smokestack, with access hatch opened.
- VT-14-21:** View down into steam chimney from interior of smoke bonnet.
- VT-14-22:** Engine room, as seen from starboard side, forward corner. In left foreground is centrifugal water pump driven by a two-cylinder steam reciprocating engine to supply water to trim tanks. Center of view shows hot well for main engine, and at right is bottom of cylinder, condenser, and valve chest of main (walking beam) engine. X-braces in left side of image are stiffening trusses for the hull.
- VT-14-23:** Engine room, as seen from starboard side near ladderway from main (promenade) deck. At left is hot well for main engine, at the sides of which are two reciprocating boiler feedwater pumps. Behind the hot well is the condenser and the foot of one of the legs supporting the walking beam A-frame. Hot well and condenser rest on a large bed (painted black) which runs the length of the engine. In the right foreground is water pump for trim tanks.
- VT-14-24:** Top of hot well looking forward, with overflow pipe shown at lower left of view. Hot well crosshead and crosshead guides appear above, behind which is main cylinder for walking beam engine. Trussed eccentric rods for engine valve gear appear to left and right of crosshead.
- VT-14-25:** Hot well, as seen from port side aft. Waste water overflow pipe appears at left, behind which is bilge pump. At base of hot well on either side are reciprocating boiler feedwater pumps driven from hot well crosshead. (Labels were applied by HAER recording team and are not original to equipment.)

Sidewheel Ferry TICONDEROGA
HAER No. VT-14 (page 4)
INDEX TO PHOTOGRAPHS

- VT-14-26: Port side of engine room looking forward from aft bulkhead. This area contains mostly electrical equipment. Two single-cylinder steam-driven dynamos are located near the engine bed, one at right foreground, the other in background. At left in image are a motor-generator set installed to convert DC current (from dynamos) to AC current. Edge-on view of control panel appears near center of image.
- VT-14-27: View looking to port from ship's centerline toward main electrical control panel, behind which is DC-AC motor-generator set. DC dynamo appears at lower right of image, waste water overflow pipe from hot well appears in upper right of image.
- VT-14-28: Main engine air pump located to port side of main engine cylinder beside engine bed. Dynamo lies aft of air pump (at right), pipe at extreme left of image carries lake water to condenser valves.
- VT-14-29: Engine room tools (X-brace is part of hull stiffening truss).
- VT-14-30: Engine controls and valve gear, looking aft on main (promenade) deck level. Threaded admission valve lift rods (two at immediate left of chronometer) permit adjustment of valve timing in lower and upper admission valves of cylinder (left rod controls lower valve, right rod upper valve). Valve rods are lifted by jaw-like "wipers" during operation. Exhaust valve lift rods and wipers are located to right of chronometer. Crank at extreme right drives valve wiper shaft when engaged to end of eccentric rod, shown under "Crank Indicator" dial. Pair of handles to immediate left of admission valve rods control condenser water valves; handles to right of exhaust valve rods control feedwater flow to boilers from pumps. Gauges indicate boiler pressure (left) and condenser vacuum (right); "Crank Indicator" on wall aids engineer in keeping engine crank off "dead-center" at stop so that engine may be easily restarted.
- VT-14-31: Detail of main engine controls, looking aft.
- VT-14-32: View looking aft over tops of valve chambers, main cylinder, and cylinder crosshead from salon deck level. Forward pair of engine A-frame legs appears behind cylinder.
- VT-14-33: View forward over tops of main cylinder and valve chests. Cylinder lubricator shown in immediate foreground. Pans under crosshead guides collect excess oil from guides.

**Sidewheel Ferry TICONDEROGA
HAER No. VT-14 (page 5)
INDEX TO PHOTOGRAPHS**

- VT-14-34: Detail of main cylinder crosshead and crosshead guides from aft.
- VT-14-35: Detail of piston rod end and connecting rod ends at crosshead.
- VT-14-36: View looking aft at main engine crank and connecting rod. Main engine A-frame legs appear to either side of crank.
- VT-14-37: View from salon deck showing detail of main engine A-frame and ladderway in engine compartment.
- VT-14-38: Port side of engine compartment at salon deck level, with salon wall panels removed to show engine frame. Main connecting rod from crank to walking beam appears at extreme right of view, top of cylinder and piston rod appear at extreme left.
- VT-14-39: Detail of starboard side of walking beam from hurricane deck.
- VT-14-40: Oblique view of walking beam from starboard bow.
- VT-14-41: Galley in ship's caboose, as seen looking aft from forward end. Hotplates and coffee urn appear in foreground, stairway to aft saloon on main (promenade) deck appears in background. Drawing board at left of view was erected for HAER recording project; team members Alexis Casariego and Ellen Stoner shown at board.
- VT-14-42: Detail of water-tight door in lower hold on forward side of bulkhead between ship's caboose and lazarette.
- VT-14-43: Detail of water-tight door in lower hold on aft side of bulkhead between ship's caboose and lazarette. This bulkhead is of welded construction, installed late in the vessel's career.
- VT-14-44: General view of lazarette, looking aft showing construction of frames, deck beams, brackets, stringers, strakes and riveting details. Note steering chains in overhead near sides of hull.
- VT-14-45: View looking aft in aft dining room on main deck.
- VT-14-46: View looking forward in aft dining room on main deck.
- VT-14-47: Main deck looking to port at base of main stair to salon deck.

**Sidewheel Ferry TICONDEROGA
HAER No. VT-14 (page 6)
INDEX OF PHOTOGRAPHS**

- VT-14-48:** View looking up main stair toward mirror on salon deck level.
- VT-14-49:** Top of main stair at salon deck, looking forward.
- VT-14-50:** Salon deck looking forward from after end. Stair well mirror covers aft end of engine compartment.
- VT-14-51:** Aft end of salon, salon deck.
- VT-14-52:** View into clerestory over aft end of salon.
- VT-14-53:** Detail of stencilling and joinery in salon clerestory.
- VT-14-54:** Aft end of salon deck, looking aft.
- VT-14-55:** Aft end of salon deck, looking forward.
- VT-14-56:** Salon deck, detail of engine compartment panelling with main stair mirror and newel post carvings.
- VT-14-57:** Interior of cabin, salon deck starboard side.
- VT-14-58:** Interior of aftmost cabin, salon deck starboard side.
- Vt-14-59:** Forward end of salon deck superstructure and wheel house.
- VT-14-60:** Forward end of salon deck showing forward companionway, and superstructure from salon deck cabin and wheelhouse.
- VT-14-61:** View forward down hurricane deck toward salon clerestory, walking beam, stack, and wheelhouse. Second smaller stack is from donkey boiler on main deck.
- VT-14-62:** View of walking beam and stack on hurricane deck, short pipe immediately behind smokestack is safety valve vent pipe.
- VT-14-63:** View aft along starboard side of hurricane deck from starboard bridge, short stack beyond lifeboat at left of image is donkey boiler stack.
- VT-14-64:** View out across bow from wheelhouse windows.

**Sidewheel Ferry TICONDEROGA
HAER No. VT-14 (page 7)
INDEX TO PHOTOGRAPHS**

- VT-14-65:** Interior of wheelhouse looking to port, showing ship's wheels for steering, binnacle (in wooden box to extreme right), and searchlight control (at top of window over binnacle); handle suspended from overhead on cord operated whistle.
- VT-14-66:** Interior of wheelhouse looking aft; pipes on aft wall were for heating.

HISTORIC AMERICAN ENGINEERING RECORD

INDEX TO PHOTOGRAPHS

HAER
VT
4-SHEL,
1-

ADDENDUM TO
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HAER No. VT-14
(Page 8)

INDEX TO COLOR TRANSPARENCIES

Note: HAER No. VT-14-1 through VT-14-66 were previously transmitted to the Library of Congress.

All color xerographic copies were made from a duplicate color transparency.

All photographs by Jet Lowe, Staff Photographer, July 1988.

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| VT-14-67 (CT) | DETAIL OF WATER-TIGHT DOOR IN LOWER HOLD ON AFT SIDE OF BULKHEAD BETWEEN SHIP'S CABOOSE AND LAZARETTE. THIS BULKHEAD IS OF WELDED CONSTRUCTION, INSTALLED LATE IN THE VESSEL'S CAREER. |
| VT-14-68 (CT) | STARBOARD BOW. |